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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/842,224

Applicant(s)

ADLER ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005 and 08 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-12 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-12, 17 and 18 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Appeal Brief

1. Applicant's appeal brief and supplemental appeal brief submitted on April 1, 2005 and July 8, 2005, respectively, have been received and carefully considered. Upon a reconsideration of Applicant's arguments, the finality of the rejection of the last Office action has been withdrawn. Claims 13-16 are cancelled. Claims 4-6 are withdrawn from consideration. It is further noted that claim 18 depends from withdrawn claim 4, and therefore, claim 18 is also withdrawn from consideration. Claims 1-3, 7-12 and 17 are currently under examination.

Response to Arguments

2. Applicant's arguments filed April 1, 2005 and July 8, 2005 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly found prior art references, cited below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 is rejected under 35 U.S.C. 102(b) as being anticipated by Nagai (JP 04-

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367488).

Regarding claim 1, Nagai discloses an apparatus comprising:

a pressure shell (i.e., tank body 1) having an encircling body wall and shell ends at each of opposite ends of the body wall (see FIG. 1); a plurality of cooling ducts (i.e., passages 4, defined by elements 3, or 3/6a/6b; FIG. 2, 3) extending around an outer surface of the body wall 1, said ducts being fixedly connected to the outer surface (i.e., by means of welds 9a, 9b), wherein interior spaces 4 of the ducts communicate with the outer surface 1 (see FIG. 2, 3); a fluid supply conduit and a fluid discharge conduit communicating with the cooling ducts 4 (i.e., inherent, but not shown, for enabling the supply and discharge of heat transfer fluid to the circular openings of the heat exchanger 2 shown in FIG. 1); and a lining of a refractory (i.e., a glass lining layer 5) encircling an inner surface of the body wall 1.

Regarding claims 2 and 3, each cooling duct (see FIG. 2) comprises a pair of spaced webs fixedly connected at common edges of each to the body wall outer surface 1, by means of welded connections 9a, 9b) and an arcuate segment joins opposite edges of the webs.

Instant claims 1-3 structurally read on the apparatus of Nagai.

4. Claims 1-3, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Jewell (WO 01/86220).

Regarding claims 1, 11 and 12, Jewell discloses an apparatus comprising:

a pressure shell (i.e., pressure vessel shell 28) having an encircling body wall and shell ends at each of opposite ends of the body wall (see FIG. 6B);

a plurality of cooling ducts (i.e., numerous half-pipe conduits 56 defining passages 38) extending around an outer surface of the body wall 28 (see FIG. 6B), said ducts 56 being fixedly

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connected (e.g., by means of welds) to the outer surface 28, wherein the interior spaces 38 of the cooling ducts 56 communicate with the outer surface of the body wall 28;

a fluid supply conduit and a fluid discharge conduit communicating with the cooling ducts 56 (i.e., a heat transfer fluid 36 is supplied to and discharged from the passages 38 of ducts 56 via inlets and outlets 58, by means of the conduits 280/281 and 282/285, respectively, of fluid control system S-280; FIG. 2B, 6B); and

a lining of a refractory encircling an inner surface of body wall 28, the lining comprising at least two separate concentric layers of refractory material (e.g., refractory layers 20,22,24; shown in FIG. 6A), the lining comprising a material such as ceramic (e.g., a high alumina refractory brick with an insulating firebrick refractory; also disclosed are liners of "ceramic, glass, or other coatings"; see page 13, line 14 to page 14, line 2).

Regarding claims 2 and 3, each duct 56 is fixedly connected to the body wall 28 outer surface with weld connections (see inset of FIG. 6B and also FIG. 6C). As best understood, the end portions of the "C" shape of duct 56 define a pair of spaced webs, and the middle portion of the "C" shape of duct 56 defines an arcuate segment joining the opposite edges of the webs.

Instant claims 1-3, 11 and 12 structurally read on the apparatus of Jewell.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the

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claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell (WO 01/86220) in view of McKee (US 1,961,903).

The ducts 56 extend circularly around the body wall outer surface 28 (see FIG. 6B) and said fluid supply and fluid discharge conduits (i.e., conduit 280/281 for feeding heat transfer fluid 36 and conduit 282/285 for discharging heat transfer fluid 36 in system S-280; see FIG. 2B) are disposed, respectively, at one of two opposite ends of the shell body 28 (i.e., for feeding fluid 36 to the bottom 58 of the duct 56, and for discharging fluid 36 from the top 58 of the duct 56; see FIG. 2B, 6B). Although Jewell is silent as to the fluid supply and fluid discharge conduits being annular, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the fluid supply and fluid discharge conduits as such in the apparatus of Jewell, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the annular conduit configuration is well known in art with respect to the construction of headers or manifolding structures for supplying or discharging fluids to and from heat exchangers. McKee (FIG. 1, 2) evidences conventionality by disclosing an apparatus comprising an annular fluid supply conduit and an annular fluid discharge conduit (i.e., circular header *i* and circular header *i'*) for feeding and withdrawing fluid from a plurality of heat transfer conduits (i.e., jacket members *h*).

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6. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell (WO 01/86220) in view of McKee (US 1,961,903), as applied to claim 7 above, and further in view of Vihl (US 3,318,376) OR Siclari et al. (US 3,787,481).

Each duct 56 encircles the body outer wall surface 28 spaced apart and parallel to ducts 56 adjacent thereto (see FIG. 6B). Although Jewell does not specifically disclose or illustrate the encircling ducts 56 being arranged obliquely of a central axis of the body wall 28, or in a spiral course around the body wall 28 outer surface, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to configure the cooling ducts 56 as such in the modified apparatus of Jewell, on the basis of suitability for the intended use thereof, because heat transfer jackets comprising an oblique or spiral cooling duct configuration are conventionally known in the art. Vihl (FIG. 1, 2), for instance, evidences conventionality by disclosing an apparatus comprising a plurality of cooling ducts (i.e., wrapping segments 24, 26, 28) encircling the body outer wall surface of a vessel 22 in an oblique or spiral fashion. Siclari et al. (Figure) further evidences conventionality by disclosing an apparatus comprising a cooling duct 14 encircling the body outer wall surface 13 of a vessel in an oblique or spiral fashion.

7. Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell (WO 01/86220) in view of McKee (US 1,961,903) AND Vihl (US 3,318,376) OR Siclari et al. (US 3,787,481).

The ducts 56 in the apparatus of Jewell extend circularly around the body wall outer surface 28 (see FIG. 6B), and said fluid supply and fluid discharge conduits (i.e., conduit 280/281 for feeding heat transfer fluid 36 and conduit 282/285 for discharging heat transfer fluid 36 in system S-280; see FIG. 2B) are disposed, respectively, at one of two opposite ends of the

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shell body 28 (i.e., fluid 36 is supplied to the bottom 58 of the duct 56, and fluid 36 is discharged at the top 58 of the duct 56; see FIG. 2B, 6B). Although Jewell is silent as to the fluid supply and fluid discharge conduits being annular, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the fluid supply and fluid discharge conduits as such in the apparatus of Jewell, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the annular conduit configuration is well known in art with respect to the construction of headers or manifolding structures for supplying and discharging heat transfer fluids to and from heat exchangers. McKee (FIG. 1, 2) evidences conventionality by disclosing an apparatus comprising annular fluid supply and fluid discharge conduits (i.e., circular header *i* and circular header *i'*) for feeding and withdrawing fluid from a plurality of heat transfer conduits (i.e., jacket members *h*).

In addition, although Jewell does not specifically disclose or illustrate the encircling ducts 56 being arranged with at least a longitudinal component along the body wall 28, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to configure the cooling ducts 56 as such in the modified apparatus of Jewell, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that heat transfer jackets comprising cooling ducts having at least a longitudinal component are conventionally known in the art. Vihl (FIG. 1, 2), for instance, evidences conventionality by disclosing an apparatus comprising a plurality of cooling ducts (i.e., wrapping segments 24, 26, 28) encircling the body outer wall surface of a vessel 22 in an oblique or spiral fashion. Siclari et al. (Figure) further evidences conventionality by disclosing an apparatus comprising a cooling duct 14 encircling the body outer wall surface 13 of a vessel in an oblique or spiral fashion.

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8. Claims 1-3, 7, 10-12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Affleck (US 2,697,598) in view of Schulz (US 4,340,397).

Regarding claims 1 and 11, Affleck (FIG. 1-3) discloses an apparatus (i.e., a blast furnace) comprising:

an encircling body wall 17 and a plurality of cooling ducts (i.e., defining a plurality of fully enclosed water circulation channels 18) extending around an outer surface of the body wall 17, said ducts 18 being fixedly connected to the outer surface 17, wherein the interior spaces of ducts 18 communicate with the outer surface of the body wall 17; a fluid supply conduit (i.e., water inlet pipe 21) and a fluid discharge conduit (i.e., discharge pipe 23) communicating with cooling ducts 18; and a lining of refractory encircling an inner surface of the body wall 17, wherein the lining comprises at least two separate concentric layers 15 and 16 of a refractory material.

Although Affleck does not specifically illustrate the body wall 17 as being part of a pressure shell having shell ends at each of opposite ends of the body wall, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the body wall 17 as part of a pressure shell in the apparatus of Affleck, on the basis of suitability for the intended use, because it is well known in the art that blast furnaces comprise pressure shells, as evidenced by Schulz (i.e., blast furnace 10 with pressure shell 12; see FIG. 1).

Regarding claims 2 and 3, each cooling duct 18 comprises a pair of spaced webs (i.e., the walls of the duct 18, extending perpendicularly from the wall 17; or plates 19; see FIG. 2) fixedly connected at common edges of each to the body wall outer surface, and a flat segment (i.e., the wall of duct 18, substantially parallel to the wall 17) joining the opposite edges of the

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webs, the connections being made by welds (see column 1, lines 33-39). Affleck, however, is silent as to the flat segment comprising an arcuate segment. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the flat segment to comprise an arcuate segment in the apparatus of Affleck, on the basis of suitability for the intended use thereof, because changes in shape involves only ordinary skill in the art. *In re Dailey* 149 USPQ 47, 50 (CCPA 1966); *Glue Co. v Upton* 97 US 3, 24 (USSC 1878), and the Examiner takes Official Notice that the claimed arcuate shape for the construction of cooling ducts is well known in the art of heat exchanger construction.

Regarding claim 7, the ducts 18 extend circularly around the body wall outer surface 17 (see FIG. 2), said fluid supply conduits 21 and fluid discharge conduits 23 being disposed, respectively, at one of two opposite ends of the shell body (i.e., the supply conduits 21 connect to the bottom of ducts 18, and the discharge conduits 23 connect to the top of ducts 18; see FIG. 3). Affleck, however, is silent as to the supply and discharge conduits 21,23 being annular. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the fluid supply and fluid discharge conduits as such in the apparatus of Affleck, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the annular conduit configuration is well known in art with respect to the construction of headers or manifolding structures for supplying and discharging heat transfer fluids to and from heat exchangers.

Regarding claim 10, the ducts 18 encircle the body outer wall surface 17 spaced from ducts 18 adjacent thereto (see FIG. 2, 3).

Regarding claim 12, Affleck discloses that the refractory material may comprise a

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relatively thick layer of carbon blocks 15, and an inner layer of ceramic brickwork 16. In addition, other parts of the wall can embody a similar construction, or comprise the “more common ceramic brickwork construction.” (see column 1, lines 50-66). Although carbon blocks 15 are disclosed for one of the refractory layers, it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute another known, suitable refractory material for the carbon in the apparatus of Affleck, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the construction of furnaces using layers of ceramic refractory is well known in the art.

Regarding claim 17, the ducts 18 extend in a direction having at least a longitudinal component along the body wall 17 (see FIG. 3), with said fluid supply 21 and fluid discharge conduits 23 are located, respectively, at one of two opposite ends of the shell body (i.e., the conduit 21 connects to the bottom of duct 18, whereas the conduit 23 connects to the top of duct 18; see FIG. 3). Affleck, however, is silent as to the supply and discharge conduits 21,23 being annular. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the fluid supply and fluid discharge conduits as such in the apparatus of Affleck, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the annular conduit configuration is well known in art with respect to the construction of headers or manifold structures for supplying and discharging heat transfer fluids to and from heat exchangers.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449.

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The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
March 31, 2006 



ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER